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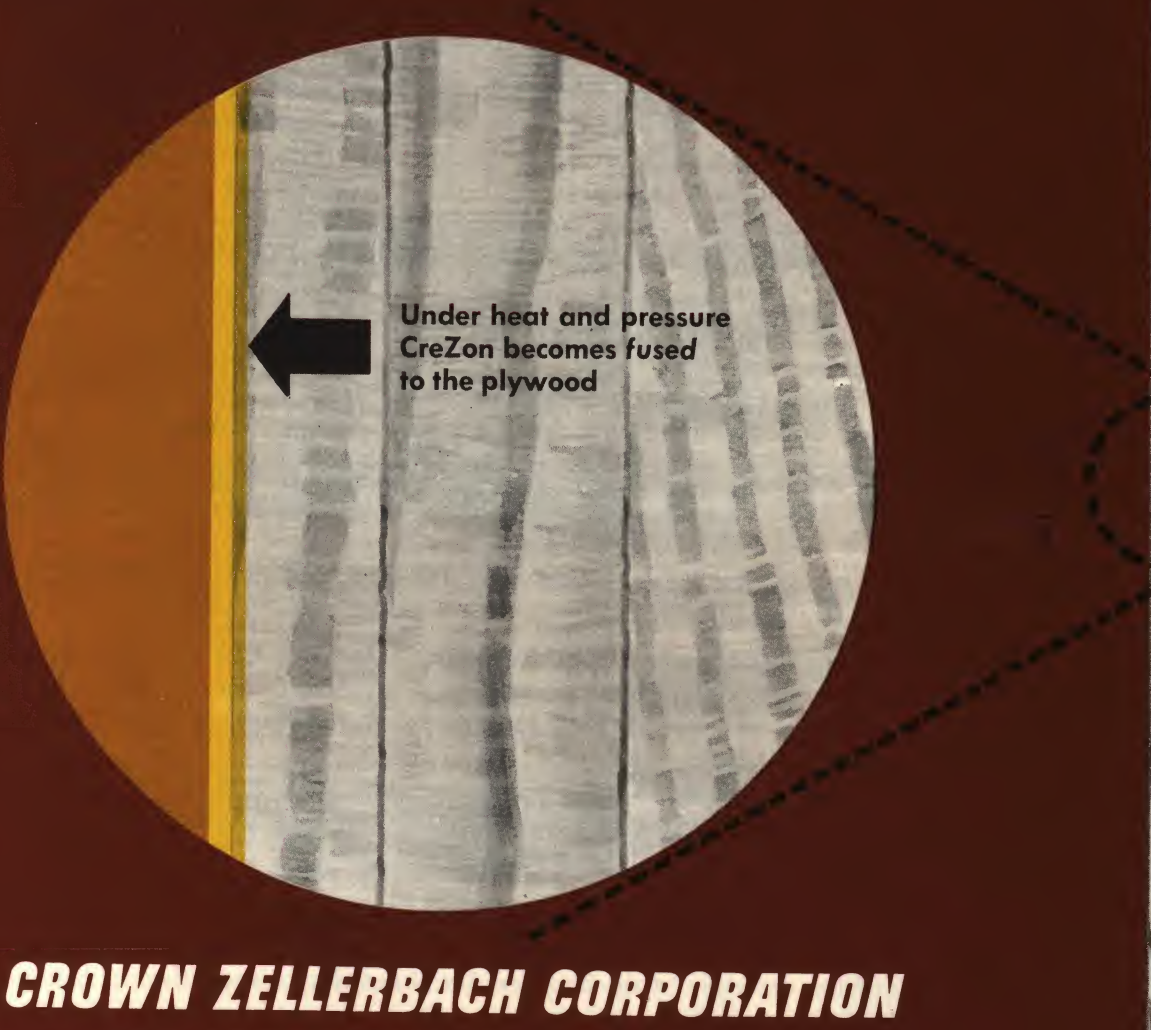
CreZon®

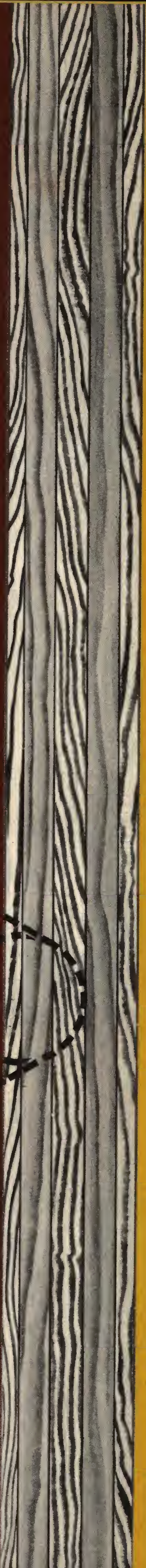
Phenolic resin fused weatherproof surface

Permanently Protected Plywood

AIA No. 19-E-5



Under heat and pressure CreZon becomes *fused* to the plywood



AIA No. 19-E-5

CROWN ZELLERBACH CORPORATION

SAN FRANCISCO 19, CALIFORNIA

CreZon

Some Successful Uses

Plywood, permanently protected with Crown Zellerbach CreZon has been found particularly well-suited for these applications:

Flat siding

Lap siding

Beveled siding

Soffits

Gable ends

Garage doors

Cabinet work

Shutters

Interior partitions

Farm shelters

Counter tops

Window boxes

Planters

Street and traffic signs

Boat hulls

Outdoor displays

CreZon Plywood is also well adapted to use in many other phases of light construction.

Characteristics and Properties

Crown Zellerbach CreZon is an overlay sheet of wood fiber and phenolic resin. The phenolic resin engineered especially for CreZon, is mixed with the wood fibers and formed into a sheet with a thickness of 0.014 inches. A phenolic glue-line is added and the sheet is ready for fusing to plywood.

It was found that by fusing this phenolic resin sheet to exterior-type Douglas Fir plywood, an economical building material was produced that was impervious to weather and easy to work with.

The overlay surface is manufactured by Crown and shipped in rolls to plywood manufacturers. At the plywood mill, the CreZon overlay is bonded to the manufacturer's plywood. Under heat and pressure, the molecules of the phenolic-resin sheet react with the cellulose wood fibers of the veneer, interlocking, and forming a permanent, inseparable bond. The CreZon is, in effect, fused with the plywood, and becomes CreZon Plywood.

CreZon Plywood resists checking even under extreme weather conditions. It takes paint far better than bare wood, holds it longer, and it takes less paint and fewer coats to cover. It is easier to work with because the CreZon overlay prevents the face veneer from splintering. The ease and speed with which it can be applied permit savings in labor cost.

CreZon Plywood is manufactured by several leading plywood producers and marketed under their brand names. A list of these manufacturers appears on the back cover of this catalog.

Quality of CreZon Plywood is assured because the phenolic-resin sheet may be overlaid only on grade A or B exterior-type plywood.

CreZon Plywood is well adapted to light construction. Tests have been conducted to determine its reactions to accelerated weathering, fire, paint-remover, and other extreme conditions. A summary of these tests can be found on page 7.

Leading uses of CreZon Plywood are described, with complete application and technical information, on pages 3 through 6.

Specifications for the use of CreZon Plywood are on page 7.

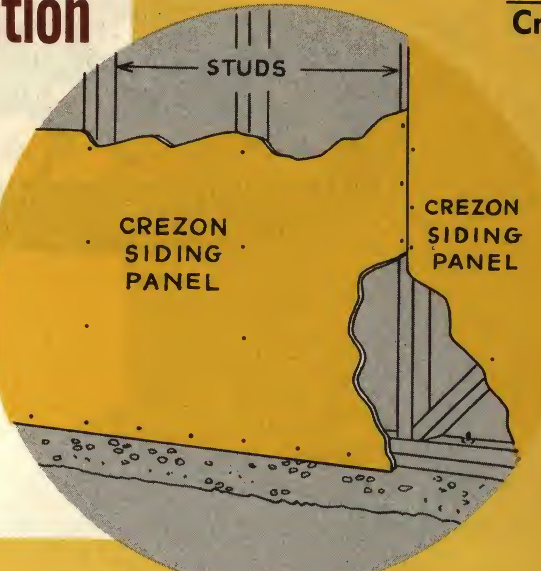
For further information, and a free sample of CreZon Plywood, mail the attached pre-paid postcard. Application and technical standards are not uniform throughout the country. Local building standards and regulations should be consulted.

Applications and Technical Information

For Use As Flat Siding

CreZon Plywood is available in 1/4″, 5/16″, 3/8″, 1/2″, 5/8″, and 3/4″ thicknesses in most standard plywood sizes. It may be applied rapidly and easily as exterior flat siding. 5/16″, 3/8″ and 1/2″ thicknesses are generally used. Panels should be butted together. Battens, V-joints, or any other standard joint treatment may be employed. Nails should be driven on 6-inch centers around all edges of the CreZon Plywood and on 12-inch centers on all intermediate studding. 6d nails are recommended for 5/16″ and 3/8″ CreZon Plywood and 8d nails for 1/2″ CreZon Plywood.

Hot-dipped galvanized or other non-corrosive casing or common nails may be used. Casing nails may be flush or set and filled. Common nails flush only. CreZon Plywood is available surfaced either on one or both sides. Where both surfaces are exposed, CreZon Plywood surfaced on both sides is recommended.



For Use As Lap Siding

CreZon Plywood in all thicknesses is available for use as lap siding. 4′ x 8′ panels may be ripped to make lap siding, or 8′ lengths of CreZon Plywood lap siding, in 12″, 16″ or 24″ widths, are available from plywood manufacturers using CreZon. Lap siding is packaged with wedges for solid backing and shadow-line furring strips are furnished either separately or as a part of the siding. Edges are beveled approximately 20-30° for drip.

Thickness recommendations for CreZon Plywood Lap Siding:

SHEATHED WALLS

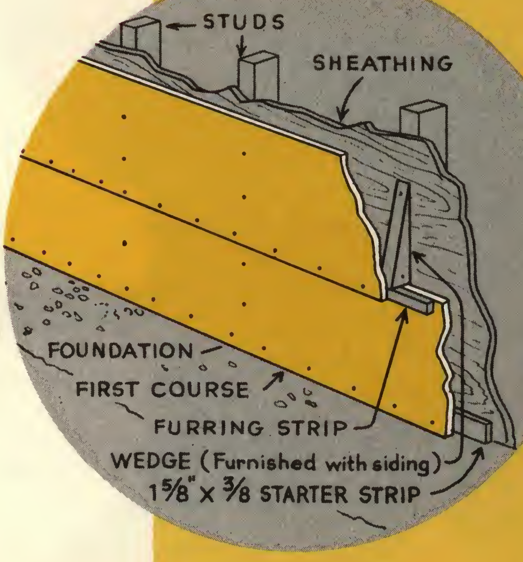
	Width of Siding		
Stud Spacing	12″	16″	24″
16″	5/16″	3/8″	3/8″
20″	5/16″	3/8″	3/8″
24″	5/16″	3/8″	1/2″

UNSHEATHED WALLS

	Width of Siding		
Stud Spacing	12″	16″	24″
16″	3/8″	3/8″	1/2″
20″	3/8″	1/2″	5/8″
24″	1/2″	1/2″	5/8″

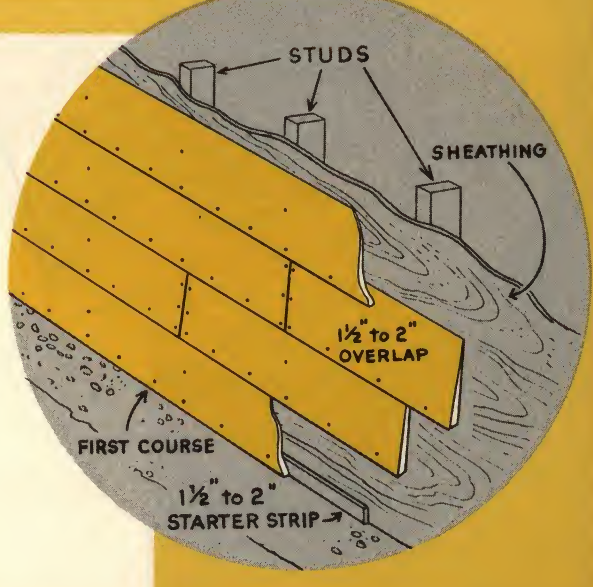
Recommended lap for 12″ siding is 1 1/2″; for 16″ and 24″ widths, 2″. Shingle or other wedges (supplied by many manufacturers of plywood) should occur on all intermediate studs and under each vertical joint. Hot-dipped galvanized or other corrosion-resistant casing or common nails may be used. For 5/16″ and 3/8″ CreZon Plywood, 6d nails should be used. For 1/2″ CreZon Plywood, 8d nails should be used. 12″ siding requires nails each 6″ o.c. vertically. 16″ and 24″ siding requires nails each 8″ o.c. vertically. All siding requires nails each 5″ o.c. along bottom edge through lap.

Vertical joints should be staggered, placed over studs, and be backed by a wedge and should have approximately 1/32″ space filled with non-hardening caulking. Corners may be either butted against corner boards or covered with metal corners and should be backed by wedges and caulked.



For Use As Bevel Siding

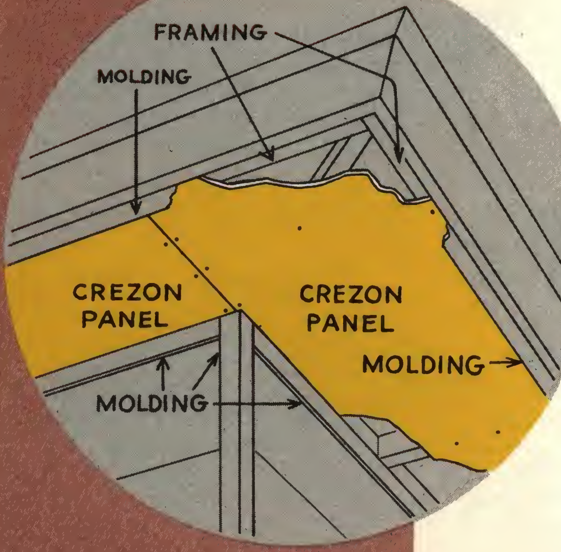
CreZon Plywood is also available as beveled lap siding in both 12″ and 16″ widths. 12″ beveled siding has a 9/16″ butt; 16″ beveled siding has an 11/16″ butt. It is produced in 10′ lengths. Beveled CreZon Plywood siding strips should be applied so that each new course overlaps the previous course at least 1 1/2″. Vertical joints should be staggered and centered over studs. Joints should be butted with 1/32″ space between butts which may be filled with non-hardening caulking. When using 16″ widths, with an 11/16″ butt, 8d nails are recommended for the lower edge and spaced not more than 8″ on centers at vertical joints. 6d nails should be used with 12″ siding. All nails should be hot-dipped galvanized or other non-corrosive material. Casing nails may be flush or set and filled. Common nails should be flush. When nailing vertically, care must be taken not to force the siding tightly against the stud. Otherwise a "dished-in" effect will result. All outside or inside corners should be butted against corner boards or covered with metal corners.



CreZon

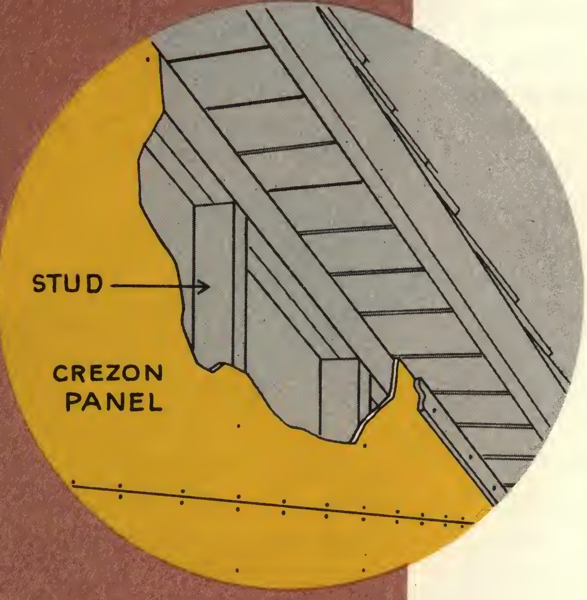
Applications and T

For Use As Soffits



Standard 4′ x 8′ CreZon Plywood panels are well-adapted for soffits. Thicknesses of ⅜″ or 5/16″ are recommended. Porches and breezeways, where ability to withstand weather is also important, have successfully employed CreZon Plywood as ceiling material, where the usual thickness is again ⅜″ or 5/16″. In using CreZon Plywood for soffits and ceilings, it is recommended that the panels be applied with surface grain perpendicular to the framing members. Nailing should be with 6d casing or common nails either hot-dipped galvanized or of other non-corrosive material. Nails should be spaced 6″ on centers at all panel edges and 12″ at intermediate bearings. Casing nails may be flush or set and filled; common nails flush. Joints should be butted over framing, with approximately 1/32″ between, and may be filled with non-hardening caulking or other similar material. If, for some reason, CreZon Plywood ½″ or thicker is used, 8d nails should be used. If both sides of any panel are exposed, double surfaced CreZon Plywood is recommended.

For Use As Gable Ends

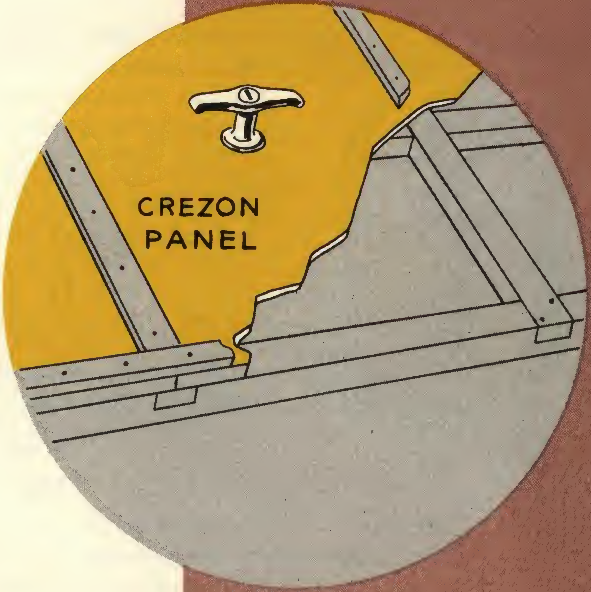


Either 4′ x 8′ panels or siding widths of CreZon Plywood are equally well-suited for use as gable ends, depending on the type of construction. CreZon Plywood panels are also available in most other standard sizes. Thicknesses of 5/16″, ⅜″, and ½″ are genally used. Panels should be butted together with approximately 1/32″ between which may be filled with non-hardening caulking. Joints may be covered with battens, or any other standard joint treatment may be employed. Hot-dipped galvanized or otherwise non-corrosive nails are recommended. They should be driven at intervals of 6″ on centers along panel edges and on 12″ centers on each intermediate stud. For 5/16″ and ⅜″ CreZon Plywood, 6d nails are required; greater thicknesses require 8d nails. Casing nails may be driven flush or set and filled; common nails flush only. It is recommended that the CreZon Plywood be placed with the face grain vertical, that is, parallel to the studding. Gable ends and attic spaces should be adequately ventilated to prevent the build-up of excessive humidity. It is suggested that the overall layout of panels be considered before cutting individual panels to fit in order to make maximum use of each panel and avoid unnecessary trim.

hnical Information

For Building Garage Doors

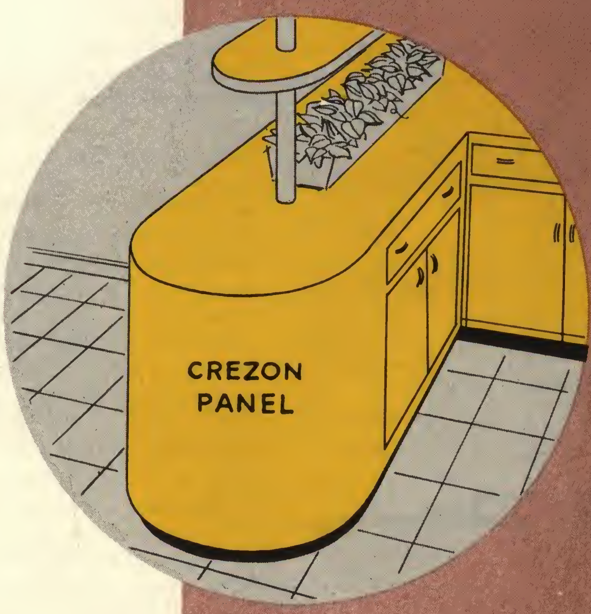
Light, strong garage doors with excellent paintable surfaces inside and out can be easily fabricated with 4′ x 8′ CreZon Plywood in 1/4″ or 5/16″ thicknesses and faced on both sides. Panels are also available from some manufacturers in 4′ x 7′ sizes. Panels may be butted together or other forms of joints may be employed. Ship-lap, shim, V-groove, and batten joints are all appropriate, depending on the desired effect. In using the shim joint, cold setting resorcinal formaldehyde resin glue should be applied to three sides of the shim. Nails should be hot-dipped galvanized or otherwise non-corrosive casing or common nails. Otherwise, casing nails may be driven flush or set; common nails flush only. 6d nails should be spaced 6″ on centers at edges and 12″ on centers on all intermediate framing. Additional rigidity of the door can be gained by gluing the panels to the framing members. In this case, a 4d nail is adequate when using 1/4″ CreZon Plywood. Cold setting resorcinal formaldehyde resin glue should be used. In order to obtain maximum resistance to bending, the face grain should be perpendicular to the main framing members. Hardware should be affixed to framing members.



For Cabinet Work

CreZon Plywood's smooth, paintable surface and the ease with which it may be worked make it ideal for many types of cabinet work on all types of units such as doors, bookcases, storage units, etc. Warp-free and weatherproof, it is well-suited for both indoor and outdoor furniture. In working with CreZon Plywood, it is suggested that the following tool recommendations be followed:

Hand sawing	Cross-cut saw with fine teeth and little set.
Power sawing	Fine teeth; little or no set.
Boring	Conventional woodworking tools.
Drilling	Conventional tools; will take reaming and countersinking with no splintering.
Dadoing and plowing	May be cut with or against grain of outside ply. Light edge-sanding only is necessary.
Routing	Ordinary router may be used without splitting.
Shaping	Edge-grooving for tongue-and-groove without splitting.
Jointing	Ordinary jointing operations satisfactory with no splitting; edge-planing smooth.
Sanding	CreZon overlay has no soft core. Stroke sander recommended for sanding panel.



CreZon®

Other Uses for CreZon Plywood

Interior partitions and walls

CreZon Plywood is used for interior partitions in offices, restaurant booths, department stores, etc. It combines the economy and strength of exterior-type plywood with the uniform, paintable surface of the CreZon overlay. Its wear-resistance recommends it for storage bins, counter tops, and other uses where neat appearance and low maintenance costs are important. It is suitable for wall paneling in kitchens, bathrooms, and laundries. It is impervious to steam, water, and temperature changes.

Fences and windbreaks

CreZon Plywood, overlaid on both sides, provides a smooth-surfaced, weatherproof, panel fence that is ideal for back yards and windbreaks around patios, swimming pools, etc. Outdoor patio furniture is another logical use for CreZon Plywood overlaid on both sides. It is easier to work with than ordinary plywood. It is well-suited for table tennis tables because of its absolutely smooth surface and resistance to checking, cracking, and grain rise. It is also used for cabanas, tool sheds, etc.

Boat construction

Boat builders use CreZon Plywood because of its ease of handling, bendability, and waterproof properties. It is shock-resistant and withstands abrasive wear, splintering and scuffing—all hazards common to boats tied to piers or being handled out of the water. CreZon Plywood is found by impartial tests, to hold marine paint years longer than non-overlaid plywood. Filler coat is unnecessary and between-coat sanding is cut to a minimum when finishing hulls made of CreZon Plywood. It is also used for cabins, lockers, and bulkheads.

Outdoor signs and displays

CreZon Plywood is more nearly "vandal-proof" than almost any sign material currently in use. Rocks and bullets will make holes or dents on the surface, but the tough, paint-holding overlay will prevent the marred area from splintering as in ordinary plywood signs or peeling and rusting as in metal signs. Tests indicate that CreZon Plywood signs have a life expectancy of from 8 to 15 years, making them ideal for street, traffic and safety signs. Outdoor advertising signs and displays also last longer and stay brighter.

Blackboards and desks

CreZon Plywood, overlaid on one side and finished with blackboard paint, presents the perfect surface for schoolroom chalkboards. It is absolutely smooth and uniform and the tough overlay prevents chipping or cracking. The even "tooth" of the CreZon Plywood surface will hold paint much longer and requires much less maintenance than ordinary blackboards. CreZon Plywood is also ideal for school desks and chairs. Its overlay prevents splintering which could be dangerous to school children.

Shutters

Shutters, made with CreZon Plywood, overlaid on both sides, need repainting far less frequently than those made of regular plywood. And, because of CreZon Plywood's smooth surface, they stay bright and clean longer. In making shutters, CreZon Plywood is much easier to work with than ordinary materials. When worked with ordinary hand tools, it will not split or crack, even in such operations as slotting for louvres or tongue-and-grooving, where cracking is a constant hazard. In painting, ordinary outdoor primer and house paints may be applied with brush or spray.

Specifications for **CreZon**

The facing on the overlaid plywood shall present a smooth, uniform surface suitable for economical application of quality paint finishes. It shall consist of a cellulose-fiber sheet manufactured by the beater loading process. "Beater loading" shall be defined as the process by which the resin binder for the fibers is added to the pulp before it is formed into a sheet. The cellulose fiber sheet shall contain not less than 20% by weight of a thermosetting resin of the phenol formaldehyde type. The overlay shall be not less than 0.014" thick and shall weigh not less than 65 pounds per 1000 square feet of single face, including resin and fiber. An integral phenolic resin glue line shall be applied to one surface of the facing material to bond it to the plywood. This bond shall be equal in performance to the glue lines between the sheets of the veneer which make up the plywood. The overlay face shall be a solid color. There shall be no consistent grain show-through. This product shall meet the requirements of Type II overlay in the United States Air Force specifications MIL-P-8296 regarding resin content, caliper after pressing, water absorption after 40 hours, and checking.

Tests Regarding CreZon's Physical Properties

ACCELERATED WEATHERING TEST

CreZon Plywood random samples were subjected to the standard accelerated weathering tests, consisting of a succession of four 48-hour cycles. Each cycle represented many years of weathering. Each cycle was comprised of the following treatments:

1. Soak in water at 120° F. for one hour.
2. Steam at 212° F. for three hours.
3. Freeze at 10° F. for twenty hours.
4. Bake at 212° F. for three hours.
5. Steam at 212° F. for three hours.
6. Bake at 212° F. for eighteen hours.

The impartial tests, made by an outside laboratory, resulted in the following comment: "The CreZon board still retained its original color and showed no raising of the underlying grain of the plywood. The plywood specimens, on the other hand, failed during the first phase, showing considerable checking and cracking. They were also weathered to a dull brownish-gray color, and the grain was raised considerably on many of the specimens."

Note: In this test, CreZon samples and standard samples of exterior plywood were subjected to the same weathering conditions. The quotation above compares the effects on the two products. Samples of plywood and CreZon Plywood subjected to this test are available on request.

FLAME RESISTANCE TEST

The flame resistance tests were conducted on CreZon Plywood and standard exterior-type plywood of the same thickness. The tests were made in accordance with sections 4.3.3 to 4.3.3.4 inclusive of Federal Specifications SS-A-118b. Sections relating only to equipment and procedure were followed, since the above section relates to prefabricated acoustical units. However, by standardizing on equipment and procedure, a relevant comparison between the flame resistance of the two products could be obtained.

The following tabulation shows the minutes to initial flaming, the temperature at which flaming occurred, and the cut-off time of the test:

	Initial Flaming		Cut-Off Point	
Sample	**Time-Min.**	**Temp. °F.**	**Time-Min.**	**Temp. °F.**
CreZon 1	4 ½	817	6	1116
CreZon 2	4 ½	900	8	1290
CreZon 3	4 ¾	915	10	1300
Plywood 1	4 ½	900	5 ½	1230
Plywood 2	4	842	7	1329

The impartial laboratory which made the test reported as follows: "For all practical purposes the two materials are quite similar in their burning characteristics. The CreZon has a tendency to flame over the surface with less deep penetration of the fire toward the backing."

WATER ABSORPTION TEST

Air Force specification 15015-A moisture-absorption tests show that CreZon Plywood absorbs much less water than regular exterior-grade Douglas fir plywood. Figures below are grams of water absorbed per square foot of surface submerged.

Material	*4 Hrs.*	*24 Hrs.*	*48 Hrs.*
⅜-inch Crezon Plywood	8-10	18-20	26-28
⅜-inch plywood with competitive overlay	17-19	32-34	38-40
⅜-inch exterior-grade Douglas fir plywood	34-36	50-52	68-70

This greater resistance to water absorption makes CreZon more resistant to swelling and grain-raising.

CHEMICAL RESISTANCE TEST

The table below shows the generally high chemical resistance to unpainted CreZon Plywood.

REAGENT	EFFECT
Conc. ammonium hydroxide	Red color; no damage
1% caustic	Red color; some swell
10% hydrochloric acid	Slight browning; no damage
10% sulfuric acid	Slight browning; no damage
Clorox bleach	Slight stain; no damage
Organic solvents	Slight stain; no damage
10% salt solution	No effect
Strong soap	Slight stain, softening
Strong detergent	Wets; less water-proof

CreZon Plywood Is Available Through These Plywood Manufacturers and Their Distributors

Georgia Pacific Plywood Co.
600 N. Capital Way
Olympia, Washington

Edward Hines Lumber Co.
77 West Washington Street
Chicago 2, Illinois

Mount Baker Plywood Inc.
2929 Roeder Avenue
Bellingham, Washington

Roseburg Lumber Company
P. O. Box 1091
Roseburg, Oregon

St. Paul and Tacoma Lumber Company
Tacoma, Washington

United States Plywood Corp.
55 West 44th Street
New York 36, New York

Walton Plywood Company
P. O. Box 1120
Everett, Washington

Also available in Canada through

Canadian Western Lumber Co.
15 King Edward Avenue
New Westminster, B. C.

MacMillan & Bloedel, Ltd.
837 West Hastings Street
Vancouver 1, B. C.

Western Plywood Co., Ltd.
900 East Kent Avenue
Vancouver 15, B. C.

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